177
246

What is claimed is:

1. An isolated DNA molecule which is at least 30 nucleotides in length and uniquely defines a herpesvirus associated with Kaposi's sarcoma.

2. The isolated DNA molecule of claim 1, wherein the isolated DNA molecule is cDNA.

3. The isolated DNA molecule of claim 1, wherein the isolated DNA molecule is genomic DNA.

4. An isolated RNA molecule which is derived from the isolated nucleic acid molecule of claim 1.

5. The isolated DNA molecule of claim 1 which is labelled with a detectable marker.

6. The isolated DNA molecule of claim 5, wherein the marker is a radioactive label, or a calorimetric, a luminescent, or a fluorescent marker.

7. A replicable vector comprising the isolated DNA molecule of claim 1.

8. A plasmid, cosmid, λ phage or YAC containing at least a portion of the isolated DNA molecule of claim 1.

9. A host cell containing the vector of claim 7.

10. The cell of claim 9 which is a eukaryotic cell.

11. The cell of claim 9 which is a bacterial cell.

12. An isolated herpesvirus associated with Kaposi's sarcoma.

13. A nucleic acid molecule of at least 14 nucleotides capable of specifically hybridizing with the isolated DNA molecule of claim 1.

14. A DNA molecule of claim 13.

15. A nucleic acid molecule of at least 14 nucleotides capable of specifically hybridizing with a nucleic acid molecule which is complementary to the isolated DNA molecule of claim 1.

16. A nucleic acid molecule of claim 15 wherein the nucleic acid molecule is capable of hybridizing with moderate stringency to at least a portion of a nucleotide sequence as shown in Figure 3A (SEQ ID NO: 1).

17. An isolated peptide encoded by at least a portion of a nucleic acid molecule with a sequence as set forth in (SEQ ID NOs: 1-37).

18. A host cell which expresses the peptide of claim 17.

19. The isolated peptide of claim 17, wherein the peptide is linked to a second peptide to form a fusion protein.

20. The fusion protein of claim 17, wherein the second peptide is beta-galactosidase.

21. An antibody which specifically binds to the peptide encoded by the isolated DNA molecule of claim 17.

22. The antibody of claim 21, wherein the antibody is monoclonal antibody.

23. The antibody of claim 21, wherein the antibody is a polyclonal antibody.

24. The antibody of claim 21, wherein the antibody is labelled with a detectable marker.

25. The labelled antibody of claim 24, wherein the marker is a radioactive label, or a calorimetric, a luminescent, or a fluorescent marker.

26. An antisense molecule capable of hybridizing to the isolated DNA molecule of claim 1.

27. The antisense molecule of claim 26, wherein the molecule is a DNA.

28. The antisense molecule of claim 26, wherein the molecule is a RNA.

29. A triplex oligonucleotide capable of hybridizing with a double stranded isolated DNA molecule of claim 1.

30. A transgenic nonhuman mammal which comprises at least a portion of the isolated DNA molecule of claim 1 introduced into the mammal at an embryonic stage.

31. A vaccine which comprises an effective immunizing amount of the isolated herpesvirus of claim 12 and a suitable pharmaceutical carrier.

32. A method of diagnosing Kaposi's sarcoma which comprises: (a) obtaining a nucleic acid molecule

from a tumor lesion of the subject; (b) contacting the nucleic acid molecule with the labelled nucleic acid molecule of claim 13 under hybridizing conditions; and (c) determining the presence of the nucleic acid molecule hybridized, the presence of which is indicative of Kaposi's sarcoma in the subject, thereby diagnosing Kaposi's sarcoma.

33. The method of claim 32 wherein the DNA molecule from the tumor lesion is amplified before step (b).

34. A method of diagnosing Kaposi's sarcoma which comprises: (a) obtaining a nucleic acid molecule from a suitable bodily fluid of a subject; (b) contacting the nucleic acid molecule with the labelled nucleic acid molecule of claim 13 under hybridizing conditions; and (c) determining the presence of the nucleic acid molecule hybridized, the presence of which is indicative of Kaposi's sarcoma in the subject, thereby diagnosing Kaposi's sarcoma.

35. A method of diagnosing a DNA virus associated with Kaposi's sarcoma which comprises (a) obtaining a suitable bodily fluid sample from a subject, (b) contacting the suitable bodily fluid of the subject to a support having already bound thereto a Kaposi's sarcoma antibody, so as to bind Kaposi's sarcoma antibody to a specific Kaposi's sarcoma antigen, (c) removing unbound bodily fluid from the support, and (d) determining the level of Kaposi's sarcoma antibody bound by the Kaposi's sarcoma antigen, thereby diagnosing Kaposi's sarcoma.

36. A method of diagnosing a DNA virus associated with Kaposi's sarcoma which comprises (a) obtaining a suitable bodily fluid sample from a subject, (b) contacting the suitable bodily fluid of the subject to a support having already bound thereto a Kaposi's sarcoma antigen, so as to bind Kaposi's sarcoma antigen to a specific Kaposi's sarcoma antibody, (c) removing unbound bodily fluid from the support, and (d) determining the level of the Kaposi's sarcoma antigen bound by the Kaposi's sarcoma antibody, thereby diagnosing Kaposi's sarcoma.

37. A method of treating a subject with Kaposi's sarcoma, comprising administering to the subject an effective amount of an antisense molecule of claim 26 under conditions such that the antisense molecule selectively enters a tumor cell of the subject, so as to treat the subject.

38. A method for treating a subject with Kaposi's sarcoma (KS) comprising administering to the subject having a human herpesvirus-associated KS a pharmaceutically effective amount of an antiviral agent in a pharmaceutically acceptable carrier, wherein the agent is effective to treat the subject with KS-associated human herpes virus of claim 12.

39. A method of prophylaxis or treatment for Kaposi's sarcoma (KS) by administering to a subject at risk for KS, an antibody that binds to the human herpesvirus of claim 12 in a pharmaceutically acceptable carrier.

40. A method of vaccinating a subject against Kaposi's sarcoma, comprising administering to the

182
251

subject an effective amount of the peptide of claim 17, and a suitable acceptable carrier, thereby vaccinating the subject.

41. A method of immunizing a subject against a disease caused by the herpesvirus associated with Kaposi's sarcoma which comprises administering to the subject an effective immunizing dose of the vaccine of claim 12.

42. A method for preventing the development or transmission of herpesvirus associated Kaposi's sarcoma in a subject by treating a subject with Kaposi's sarcoma (KS) comprising administering to the subject having a human herpesvirus-associated KS a pharmaceutically effective amount of an antiviral agent in a pharmaceutically acceptable carrier, wherein the agent is effective to preventing the development or transmission of the KS-associated human herpes virus of claim 12.

add 17 ADD B14 add c2